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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,660	03/29/2004	Wen-Jian Lin	QCO.091A/061121	1130

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KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

STARK, JARRETT J

ART UNIT	PAPER NUMBER
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2823

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/810,660

Applicant(s)

LIN, WEN-JIAN

Examiner

Jarrett J. Stark

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4, 7, 10, 13 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-6, 11-12, 14-15, 17-18, 20-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/4/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 1/17/2007 and 2/9/2007 have been fully considered but they are not persuasive.

The Applicants submit that the newly added limitation distinguish the claimed invention from the prior art for the following reasons:

"wherein the conductor layer is susceptible to etching by an etchant suitable to remove the sacrificial layer" and the material property of "adapted to protect the second electrode from etching by an etchant suitable to remove the sacrificial layer"

The Examiner respectfully traverses this argument. The claims are directed to a structure. Method or process limitations are not read into a device claim.

Product-By-Process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. Also a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

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“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.).

Allowable Subject Matter

Claims 4, 7, 10, 13, 16, and 19 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

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The primary reason the indication of allowable subject matter is the limitation of a spacer on the sidewall of the seconded electrode. The prior art does not teach the formation of a spacer on the sidewall of the second electrode. This limitation in combination with all other limitations included in the independent claim, make a clear distinction from the searched and cited prior art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

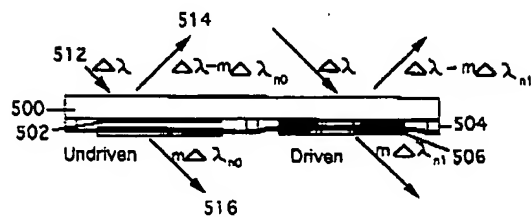
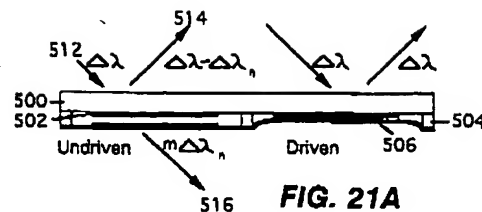
Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 5, 6, 11, 12, 14, 15, 18, 29, 24 - 28, 31, 32, 36 and 37 are
rejected under 35 U.S.C. 102(b) as being anticipated by Miles (US 5,835,255).

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Regarding claims 1, 17 and 27, Miles discloses a pre-release structure configured to form a micro electro mechanical system, upon removal of a sacrificial layer through a structure release etch process, said micro electro mechanical system suitable to use on an optical interference display cell, said micro electro mechanical system suitable to use on an optical interference display cell, the pre-release:

- a first electrode; (Miles , Fig. 21A - [502], Fig. 27)
- a second electrode; (Miles, Fig. 21A - [506], & Fig. 27)
- a first material layer; and (Miles, Fig. 2A – see response to argument above)
- a conductor layer comprising a light reflective surface facing the first electrode and set directly on the first material layer and approximately in parallel to the first electrode wherein the first material layer is positioned between the conductor layer and the first electrode; (Miles, Fig. 21A - [502] &

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[506] Fig. 21 shows the membrane support layer is between a first and second electrode (502 and 506))

a sacrificial layer directly contacting the first material layer and positioned between the first material layer and the first electrode (Miles, Fig. 25M-N), the sacrificial layer consisting of a dielectric material (layer 712 of figure 25M); and

a supporter configured to separate the first electrode and the first material layer to form a cavity upon structure release etching; (Miles, Fig. 21A - [504])

(Miles, Col. 20 lines 55-57 → 900 is symbolizes both the support membrane & conductor/electrode [506] and the substrate [500] & conductor/electrode shown in Fig. 21)

wherein the optical interference display cell formed after removal of the sacrificial layer is configured to interferometrically reflect light entering the cavity and contacting the light reflective surface (Figure 21).

Regarding claim 2, 24, 25, 28, 36, the claims cited are given no patentable weight. Product-By-Process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps.

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was

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made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted) (Claim was directed to a novolac color developer. The process of making the developer was allowed. The difference between the inventive process and the prior art was the addition of metal oxide and carboxylic acid as separate ingredients instead of adding the more expensive pre-reacted metal carboxylate. The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.).

Also regarding claim 24, 36, Miles teaches using a photoresist. Using a photoresist is standard practice in the art.

Also regarding claim 25, Miles teaches using ITO for the conducting layers. (Miles, col. 21 line 13 → ITO)

Regarding claim 3, Miles discloses the pre-release structure of claim 1, further comprising a second material layer covering the second electrode.
(Miles, Fig. 27A - [904])

Regarding claim 5,11, 29, 31, Miles discloses the pre-release structure of claim 1, wherein the material of the first material layer is selected from the group consisting of **silicon material**, **dielectric material**, transparent conductor material, cromolecule polymer, metal oxide and any arbitrary combination thereof. (Miles, col. 19 line 58 → silicon nitride)

Regarding claim 6, 12, & 18, Miles discloses the pre-release structure of claim 3, wherein the material of the second material layer is selected from the group consisting of silicon material, **dielectric material**, transparent conductor material, macromolecule polymer, metal oxide and any arbitrary combination thereof. (Miles, Fig. 27A - [904] → insulator)

Regarding claim 14, Miles discloses the pre-release structure of claim 5, wherein the transparent conductor material is indium tin oxide, indium zinc oxide, or indium oxide. (Miles, col. 21 line 13 → ITO)

Regarding claim 15, 32, Miles discloses the pre-release structure of claim 6, wherein the transparent conductor material is indium tin oxide, indium zinc oxide, or indium oxide. (Miles, col. 21 line 13 → ITO)

Regarding claim 26 and 37, Miles discloses the structure of a micro electro mechanical system of claim 1 & 27, wherein the second electrode is a movable electrode.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 9, 30, 34, and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Miles (US 5,835,325) in view of Gotoh et al. (US 5,824,608).

Regarding claim 8,9, 20-23, 30, 34, 35, Miles discloses the pre-release structure of claim 5,

Miles does not expressly disclose wherein the silicon material is poly-silicon or amorphous silicon.

Gotoh discloses wherein the silicon material is poly-silicon.

The References are analogous art because they are from the same field of endeavor, which is making a movable electrode.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use polysilicon as a support membrane.

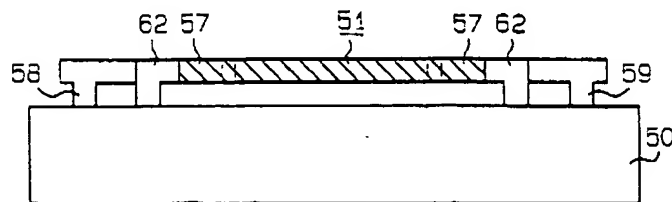
Therefore, it would have been obvious to combine the two references to obtain the invention as specified.

A movable portion 51 of a beam structure is disposed above a silicon substrate 50 with a prescribed gap therebetween. The movable portion 51 of a polysilicon thin film comprises beam

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portions 52, 53, 54 and 55, weight portion 56 and movable electrode portions 57. (Gotoh, Col. 1, lines 32-37)

FIG. 41 PRIOR ART



Regarding claims 20 – 23, 34, 35, It would have been obvious to one of ordinary skill in the art of making semiconductor devices to determine the workable or optimal value for the layer thicknesses through routine experimentation and optimization to obtain optimal or desired device performance because the layer thicknesses is a result-effective variable and there is no evidence indicating that it is critical or produces any unexpected results and it has been held that it is not inventive to discover the optimum or workable ranges of a result-effective variable within given prior art conditions by routine experimentation. See MPEP 2144.05

Given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller, Lacey and Hall* (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation."

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Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. Ex parte Ishizaka, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. In re Burckel, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory

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action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jarrett J. Stark whose telephone number is (571) 272-6005. The examiner can normally be reached on Monday - Thursday 7:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJS
March 9, 2007



MICHELLE ESTRADA
PRIMARY EXAMINER